

## Scenario Worksheet

## Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	North Carolina
Discipline Group	Engineering General
Practice Code/Name	521C - Pond Sealing or Lining, Bentonite Sealant
Scenario ID	2
Scenario Name	Bentonite Treatment - Covered
Scenario Description	Construction of a compacted soil liner, treated with bentonite, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes incorporation of the bentonite with the soil under proper moisture conditions, compaction to the designed liner thickness, and placement of soil cover over the treated liner. Practice implementation may require filter compatibility with the subgrade (graded filter or geotextile). Associated practice PS378, PS313.
Before Practice Situation	In-place soils at site exhibit seepage rates in excess of acceptable limits. Soils are suitable for treatment with bentonite.
After Practice Situation	Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.
Scenario Feature Measure	Weight of Bentonite
Scenario Unit	Ton
Scenario Typical Size	131 Typical pond liner: 1 ft. thick with 0.5 ft. soil cover x 1 acre in area @5227 bags @ 50 #/bag / 2000 #/Ton

## Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$81,132.30	\$619.33
Equipment/Installation	\$11,403.32	\$87.05
Labor	\$857.04	\$6.54
Mobilization	\$424.47	\$3.24
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$93,817.13	\$716.16

## Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	41	Bentonite	Bentonite, includes materials (50# bag)	Each	\$11.94	6795	\$81,132.30
Equipment/Installation	49	Earthfill, Roller Compacted	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.50	2420	\$8,470.00
Equipment/Installation	51	Earthfill, Dumped and Spread	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.86	894	\$2,556.84
Equipment/Installation	962	Tractor, agricultural, 120 HP	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hours	\$47.06	8	\$376.48
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	\$19.83	24	\$475.92
Labor	231	General Labor	Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc.	Hours	\$19.92	8	\$159.36
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$35.81	2	\$71.62
Labor	235	Consultant Services	Consultant services to assist in resource inventory, plan development, site surveys, site monitoring, etc.	Hours	\$75.07	2	\$150.14
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$92.60	3	\$277.80
Mobilization	1043	Mobilization, Material, distance > 50 miles	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	\$1.00	1	\$1.00
Mobilization	1143	Mobilization, Light Equipment Operator	Mobilization of light equipment operators: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$22.79	3	\$68.37
Mobilization	1146	Mobilization, Consultant Services	Management of consultant services to assist in resource inventory, plan development, site surveys, site monitoring, etc.	Hour	\$77.30	1	\$77.30